

# University of Mississippi Dept. of Physics and Astronomy

## Phys 224 Final Project Instructions

**Purpose:** Through this demonstration students, will show full and complete understanding of a topic covered during the Physics 213/214 lecture and accompanying 223/224 laboratory courses. This demonstration will be shared with the lab during the last week and will assist all students in the lab in understanding the concepts and principles demonstrated.

**General Guidance:** As with everything else in this course series, DO NOT OVER-COMPLICATE THIS! You are not expected to replicate a high energy particle accelerator, create antimatter, defy gravity, achieve superconductivity, or win a Nobel prize. Ideally these demonstrations will be about the level and complexity which would be appropriate for a group of middle school children though you will be expected to show understanding of the mathematics in your report. Try to come up with demonstrations involving everyday household items and everyday situations. If you would like to perform a demonstration which cannot be conducted within the confines of the lab space, you may create a video of you performing the demonstration and present the video in lab. You may not replicate an experiment covered in the lab.

**Proposal:** Four weeks in advance each pair of lab partners will submit a proposal for their experiment. This is to be approximately one half page outlining the concept to be covered, and plans to physically demonstrate said concept. You may set up a time to get your proposal to your TA in advance, as the same demonstration will not occur more than once in each lab section. Your TA will return your proposal the following week with either an ok to proceed, suggestions on what you may need to change to make it suitable, or the unfortunate that someone else beat you to that demo and you need to choose something different.

**Demonstration:** During the last week of lab each demonstration will be performed. You and your lab partner will have about 10 minutes (max, it's ok if you need less, but it should probably take you at least 5) to briefly cover the concept to be demonstrated (including equations) and perform the demonstration. You will be graded based on how clearly you demonstrate your chosen concept, your understanding of said concept, and your ability to explain the demonstration in a clear and educational manner.

**Report:** Before performing your demonstration, but on the same day, you will provide your TA with a write up of your demonstration. This write up is to include a thorough explanation of the concept, including the equations and mathematics and instructions on how to construct and perform the demonstration (with a materials list). This report should be approximately three to five pages, double spaced, size 12 font.

**Restrictions:** The following will not be allowed under any circumstances: exploding anything larger than a balloon, fire greater than a candle, use of liquid nitrogen, high electrical current, or anything else which carries a high risk of bodily or material damage.